KSD007482029

RA/DRA

CC: WSTM

CTSL

cc - Morby

Sanderson

18 July 1985

Rural Route #1
Benton, Kansas 67017

Morris Kay, Administrator
USEPA Region VII
726 Minnesota
Kansas City, Kansas 66101

re: Vulcan Materials Company

Dear ~~Mr. Kay~~ Morris:

I am enclosing a copy of testimony that I presented at a public hearing on 17 July 1985 regarding Vulcan's applications for repermitting of five underground injection wells at their Wichita plant.

I based my testimony on a review of a portion of the Vulcan files at the Kansas Department of Health and Environment. The Vulcan files are extensive and some of the information was withheld under a CBI claim. Evidently an attempt was made by Vulcan to also claim confidentiality on groundwater monitoring data but we did gain access to a limited amount of analyses. The groundwater monitoring information is spotty and according to the KDHE, no organized assimilation of the data is available at this time. Mrs. Donna Hinderliter had requested monitoring data from the EPA but none was available and at the suggestion of someone in the UIC branch, she contacted Mr. James Boyd of Vulcan for monitoring data--and was refused.

The situation at and around the Vulcan site is very serious. I had no idea of the magnitude of the problem until I reviewed the Vulcan documents and have to assume that you weren't aware of it either. The KDHE Oil Field and Geology Section has abused their UIC authority by allowing such conditions to prevail. As you will note, I have publicly petitioned the USEPA to conduct an environmental audit of the area.

I still haven't acquired the art of condensing information, so I will apologize in advance for asking you to personally review the enclosed statement that I presented at last evening's hearing--but please read it.We were pleased that EPA was represented by Ted Fritz last night. Mr. Fritz observed the meeting but did not testify.

Sincerely

Sharilyn Dienst

Sharilyn Dienst

30299048
Superfund

RECEIVED
JUL 25 1985
SUPERFUND BRANCH

My name is Sharilyn Dienst. I am going to begin my statement with a request for an extension of the comment period. I appreciate the opportunity to voice my concerns with any repermitting of the Vulcan injection wells. I am opposed to the use of injection wells as a means of hazardous waste disposal. I have made that statement publicly numerous times based upon a general objection to industry's use of our natural resources as a sewer for chemical offage.

That argument is based upon the premise that the waste is actually going to get to the Arbuckle. After reviewing files on Vulcan's injection wells, I am also concerned with the effect that the Vulcan injection wells have had on the groundwater from the well head TO THE ARBUCKLE during the past several years.

A review of available material indicates that every environmental media has been contaminated in the Vulcan area. The extent of water and air contamination both on and off-site indicate that this may well be one of the major environmental problems in the state of Kansas. I am basing that statement on groundwater samples taken in April of 1985 and on an EPA study of air contamination conducted in 1981.

In 1976, the Vulcan site was found to be in a highly contaminated condition. An extensive amount of effort and money was reportedly expended in an attempt to "clean up the site". Three years later, Vulcan was pronounced a "CLEANED UP SITE" in an August 3, 1979 letter from Mel Gray of the KDHE to the Environmental Protection Agency. At that time, the Vulcan site was removed from the National Listing of Hazardous Waste sites. THAT IS AMAZING.

If the conditions that prevail today at the Vulcan site are what the regulatory agencies deem "CLEANED UP", I can foresee some great problems at Furley when it's time to decide whether the remedial work at that site is adequate.

Considering the air and water contamination from the Vulcan site -- and the fact that Vulcan has been identified by the USEPA as one of the sites in Region VII whose manufacturing operations have the potential to result in DIOXIN CONTAMINATION--and that Vulcan does produce high levels of PCBs in their perchloroethylene process--I publicly petition the United States Environmental Protection Agency to conduct an Environmental Audit of the Vulcan Materials site and surrounding area to determine the exact extent of water and air contamination and to assure the safety of the citizens who are being exposed to unknown contamination in their air and water.

Nobody should have to breathe chemically contaminated air and nobody should be deprived of the use of their natural water supply for private industrial gain. I feel sure that our governmental agencies do not knowingly condone such practices.

Considering the condition that the Vulcan area is in, I don't see how any assurance can be given that the Vulcan injection wells have had no detrimental effect on useable groundwater.

In March of 1985, extremely high levels of chemical contaminants--for instance 31,000 ppb of 2,4-D--were found in on-site monitoring wells in all three aquifers. I saw no monitoring results for PCBs or Dioxins--yet both are waste byproducts of Vulcan operations. Groundwater appears to be contaminated in all directions and in all water levels off-site. At least 15 private residence wells have been contaminated. I understand that Vulcan has financed water line installation from the city of Clearwater to most of these homes and installed carbon filters at a few others.

Carbon filters may or may not reduce chemical contaminant levels in drinking water. At best, filtered drinking water provides a false assurance to the affected user. Bathing in chemically contaminated water and inhalation of contaminated air reportedly provides a greater source of exposure than actual consumption of the water.

I would hope that the regulatory agencies do not consider such acquisition of contaminated property as an adequate method of dealing with ongoing water pollution from the Vulcan site. If so, Vulcan conceivably could become the landlord of a lot of property south of Wichita. PEOPLE ON THE OUTER EDGES OF EACH VULCAN ACQUIRED PROPERTY SHOULD BE ALERT TO THIS FACT.

In 1981, an Air Emissions study was performed for the USEPA outside the Vulcan site. The study revealed that Carbon Tetrachloride, Trichloroethylene, Methylene Chloride and Perchloroethylene were detected in all directions from the site for a distance up to 3 miles. The four chemicals were found in a range from Detectable to 36,200 parts of Trichloroethylene and up to 5,600 parts of Perchloroethylene. The higher levels were reported at a location near 55th Street between Hoover and Ridge Roads--approximately one-half mile due north of Vulcan.

The study noted that chemical emissions come from on-site operations such as LEAKS IN VALVES, INCOMPLETELY SEALED CONTAINERS, FILLING AND EMPTYING OPERATIONS AND TRANSPORT OF CHEMICALS FROM ONE PLACE TO ANOTHER ON SITE.

Neighbors of the site have complained of fumes resulting in headaches and respiratory distress. One recently described fumes at her home as having a "sweet" odor. I was interested to read in this morning's paper about a train accident that spilled Carbolic Acid near El Dorado. The chemicals were on their way to the Vulcan site and the Carbolic Acid was described as having a "sweet, tarry odor".

WHAT FOLLOW UP ACTIONS HAVE BEEN TAKEN BY THE REGULATORY AGENCIES REGARDING THE USEPA REPORT OF CONTAMINATED AIR IN THE VULCAN AREA?

INCINERATOR

Vulcan has proposed to meet Federal requirements for a test burn of their Wichita incinerator by submitting data from a test burn conducted in 1981 from a much larger incinerator at the Vulcan plant in Louisiana.

Vulcan became aware in 1979 that POLYCHLORINATED BIPHENYLS (PCBS) are present in their Perchloroethylene process waste streams. PCBS AVERAGING 300 PPM HAVE BEEN OBSERVED IN THEIR HEX WASTE STREAM. DOES VULCAN HAVE AN APPROVED PCB INCINERATOR? IT WAS MY UNDERSTANDING THAT PCB INCINERATORS ARE HIGHLY REGULATED AND FEW IN NUMBER.

IN THE STACK SAMPLING DATA, PCB DESTRUCTION EFFICIENCY IS RATED AT 99.99998% BASED ON LIMITS OF DETECTION. However, those limits of detection are shown at 10 parts per billion.

IS THE PCB BURN DATA FROM THE WICHITA INCINERATOR OR FROM THE LOUISIANA INCINERATOR? IF THE DATA IS FROM THE LOUISIANA INCINERATOR, DOES THAT MEAN THAT THE WICHITA VULCAN PLANT IS AND HAS BEEN USING THEIR INCINERATOR FOR PCB INCINERATION BASED UPON DATA FROM ANOTHER PLANT IN ANOTHER STATE?

HAS ANY AMBIENT AIR MONITORING BEEN CONDUCTED IN THE VULCAN VICINITY SPECIFICALLY FOR PCBS OR FOR ANY OF THE OTHER CHEMICALS AT THE VULCAN PLANT?

I've been to several deepwell hearings in the past couple of years. I've seen sketches of injection wells drawn on a blackboard showing three protective casings--corrosion resistant cement bonding around the casing--corrosion resistant tubing. At a hearing three weeks ago, I listened to the KDHE staff explain how mechanical integrity tests are conducted to assure foolproof operation of injection wells. I've heard about the importance of compatibility between the receiving formation and the injection wastes.

After reading the history of the Vulcan injection wells--I have come to the conclusion that the KDHE and I are in great disagreement as to what constitutes a problem.

-I would like to ask what the requirements for Mechanical Integrity Tests have been in the past for the Vulcan wells?

A note from a Vulcan meeting says:"LOGS ON WELLS SUBSTITUTE FOR M.I.T.S". Is that correct? Are MITs required prior to problems or only as a reaction to problems?

Another memo from a Vulcan meeting with EPA last year notes that new integrity testing of the casing is required. Vulcan claimed that they had done an equivalent assurance of the integrity of the casing and asked if this would suffice. Vulcan threatened to appeal the requirement.

-Why does the Vulcan Draft Permit allow a 50% reduction in annulus pressure when the KDHE required notification of a 25% reduction by the High Plains well?

-Senate Bill #120 has been signed into law by the Governor. This bill requires an application fee of $10,000 per well for existing wells.

Has Vulcan submitted the $50,000 in application fees?

-Has a current review of disposal alternatives been provided? The document that I saw was undated but dwelled mainly on the financial feasibility of alternatives.

-What studies have been undertaken to protect oil and gas production in the Vulcan area? Has the impact of lateral displacement of brine in the injection zone been investigated fully? Oil production exists within 3 miles of Vulcan. A well in Florida caused pressure effects 40 miles away from the site.

-Considering the existing contamination of air and water from the Vulcan site, how are the requirements of Section 213 of the RCRA Reauthorization going to be met?

In the recently released USEPA Report to Congress on Underground Injection Wells in the United States, a statement was made that sticks in my mind:

THE COMMON PRACTICE AT A FEW OF THE FACILITIES HAS BEEN TO REWORK AN INJECTION WELL ONLY AFTER LEAKS ARE DETECTED.

Vulcan was not among those sites visited but it is apparent that Vulcan falls into that category--and has been allowed to do so by the state regulatory agency.

The history of the Vulcan wells is abysmal and a far cry from what is presented by deepwell proponents.

THE WELL CASING IS USED TO PREVENT CONTAMINATION OF UNDERGROUND SOURCES OF DRINKING WATER BY CONFINING THE INJECTION FLUID INSIDE. A CRUCIAL INDICATOR OF WELL FAILURE IS THE ANNULUS PRESSURE. LEAKS IN THE CASING CAN BE DETECTED BY A DROP IN ANNULUS PRESSURE. EVEN A VULCAN REVIEW OF THEIR WELLS NOTES THE FOLLOWING REGARDING THE IMPORTANCE OF THE ANNULUS ZONE:

"THE ANNULUS PRESSURE ASSURES THAT, SHOULD A LEAK OCCUR IN THE INJECTION STRING, NO WASTEWATER COULD FLOW INTO THE ANNULUS. THE WASTEWATER WOULD REMAIN CONTAINED."

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The following is a brief summary of six of Vulcan's wells, including the five for which they seek repermitting.

VULCAN WELL #3

3-29-77: ANNULUS PRESSURE VARIED ERRATICALLY AND DROPPED TO ZERO. When the well was pulled, several deteriorated gaskets, thread imperfections on casing joints and EXTENSIVE CASING CORROSION WAS FOUND. THE CASING REVEALED DAMAGE AND LEAKS FROM THE 500 TO 700 FOOT LEVEL.

3-31-77: TUBING REINSTALLED BUT COULD NOT RE-ESTABLISH ANNULAR PRESSURE. The following is a direct quote from a letter from Vulcan to Bryson of KDHE:

NEVERTHELESS, THE LARGE VOLUME OF IMPOUNDED WASTEWATER REQUIRED THAT WE RETURN THE WELL TO SERVICE.

THE WELL WAS USED FOR 18 DAYS WITH NO ANNULUS PRESSURE and WITH NO REPAIR. Although no firm conclusion was ever reached as to the problem, well #3 was put back into service.

1-19-80: TUBING PULLED BECAUSE OF BRINE SLUDGE BLOCKAGE.

TWO MONTHS LATER (APRIL 1980): TUBING PULLED DUE TO BRINE SLUDGE BLOCKAGE.

SIX MONTHS LATER (OCTOBER 1980): WELL SUFFERING REDUCED FLOW OWING TO BOTTOM HOLE BLOCKAGE.

FOUR MONTHS LATER (FEBRUARY 1981): TUBING PLUGGED AND DRILLED THROUGH HARD BLOCKAGE AT 3980'.

LATER THAT MONTH: ANOTHER BLOCKAGE DEVELOPED IN TUBING STRING.

IN 1983, 141,900,000 GALLONS OF WASTE WAS INJECTED THROUGH THIS WELL.

VULCAN IS SEEKING REPERMIT FOR WELL #3

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WELL #4

JULY 1982: REDUCTION IN ANNULUS PRESSURE. The repair work is as follows:

-The 141st joint of tubing had separated leaving the remaining 57 joints of tubing in the bottom of the hole.

-Fibercast tubing covered with very thick, black sludge--apparently the result of chemical contamination of the annulus oil below the tubing leak.

-Reference is made to damaged bottom hole conditions.

-Hole in joint at 2074' and at 2850' depths.

-Several thread failures.

-Older pipe very badly deteriorated inside and at the ends.

On July 14, 1982 several new areas of possible casing damage were revealed--most significant being at 2076 and 2857' depths.

-Other areas of metal loss at depths of 2273, 2292 and 2601'.

-A blockage was noted at 3413' depth and it was noted that PREVIOUS LOGS HAVE SHOWN SEVERE DAMAGE BELOW THIS DEPTH.

On July 12, 1982 during reinstallation of the tubing, the tubing stopped at the 196th joint. "ALTHOUGH THE TUBING IS HUNG UP DOWNHOLE, IT IS NOT ACTUALLY ANCHORED AT BOTH ENDS". After unsuccessfully attempting to free the string, a meeting was held with KDHE and PERMISSION WAS GRANTED TO RETURN THIS FAULTY WELL TO SERVICE.

IN 1983, 109,600,000 GALLONS OF CHEMICAL WASTE WAS INJECTED THROUGH WELL #4. VULCAN SEEKS REPERMITTING OF THIS WELL.

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WELL #6

7-5-78: ANNULUS PRESSURE FELL. PRESSURE TEST REVEALED LEAKS AND DAMAGED THREADS OR LINER. ONLY 39 OF 196 JOINTS FIT FOR REUSE.

8-14-79: ANNULUS PRESSURE FELL. "THE NEXT DAY ACID SERVICE WAS TERMINATED". I ASSUME THAT THIS MEANS THAT FOR A FULL DAY, THE

ACID SERVICE WAS CONTINUED ALTHOUGH A LEAK IN THE WELL WAS INDICATED BY THE DROP IN ANNULAR PRESSURE.

OCTOBER 1979: CASING DAMAGE WAS FOUND AT THE FOLLOWING INTERVALS:

3150-3175	SLIGHT
3215-3238	SLIGHT
3238-3254	COMPLETE FAILURE
3254-3278	SEVERE DAMAGE TO COMPLETE FAILURE
3278-3295	COMPLETE FAILURE
3295-3352	SEVERE
3352-3357	COMPLETE FAILURE
3357-3458	SEVERE TO MODERATE
3458-3590	MODERATE TO SLIGHT
3590-3600	COMPLETE FAILURE
3600-3745	SEVERE DAMAGE TO COMPLETE FAILURE
3475-3938	NO STEEL CASING PRESENT
3938	MECHANICAL CALIPER TOTAL DEPTH

Vulcan met with KDHE's Oil Field and Geology staff and it was decided to repair the casing damage.

-The first cement squeeze would not hold pressure.
-They had trouble with the third squeeze.
-The inflatable Lynes plug partially deflated and moved down the hole for 9 feet.
-Attempts to pull or push the plug resulted in getting it stuck in the hole.
-While drilling out the cement, the formation cuttings at 3949' depth changed. The author notes: "I believe that we started drilling a new hole at this point. Circulation was lost at 3970' and never regained. A new hole was drilled to 4072'."

12-28-79: Fibercast tubing eventually landed at 3965' and disposal of contaminated water began. The consultant noted: "THE PROBLEM WITH USING THIS WELL FOR ACID SERVICE IS THAT FIBERCAST TUBING FAILURE IN THE LOWER PORTION OF THE HOLE IS HARD TO DETECT. THERE ARE HOURLY FLUCTUATIONS IN ANNULUS PRESSURE AND THESE CHANGES COULD "MASK" A TUBING FAILURE."

The well was returned to service for "primarily" "essentially" neutral or basic wastewater. A profound statement was made at this point: "DIFFICULTIES WILL ARISE ONLY AFTER THE TUBING FAILS".

3-29-80: ANNULUS PRESSURE AND TUBING PRESSURE EQUALIZED AND THEY THOUGHT THE TUBING WAS EITHER PINCHED OR COLLAPSED AT ABOUT 3800 FEET.

A year later a KDHE geologist drove by the Vulcan plant and noticed that a "rig was positioned over Vulcan #6". He stopped to confer with Vulcan officials. It is noted that Well #6 had been down for approximately 60 days with no evident notification to the Department.

Well #6 had STOPPED TAKING FLUID IN MAY 1981. When the tubing was retrieved, the lower part was badly twisted.

The KDHE geologist notes that he thinks that the CASING HAS PARTED AND IS OFFSET.

An inspection log clearly showed extensive casing damage above 190'. The 7" casing was completely gone from a depth of 82' to 109'

Maintenance on Well #6 was finally discontinued and the well was abandoned--NEARLY TWO YEARS AFTER A CASING INSPECTION REVEALED EVERYTHING FROM SEVERE DAMAGE TO NO CASING AT ALL NEARLY 1000 FEET ABOVE THE DISPOSAL ZONE.

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WELL #8

December 1983: LOSS IN ANNULUS PRESSURE AND MAJOR MAINTENANCE.

-COMPLETE SEPARATION AT 30TH JOINT OF TUBING STRING.
-SOME TUBING LEFT IN OPEN HOLE.
MAJOR MAINTENANCE CONTINUED THRU EARLY JANUARY 1984.

85,400,000 GALLONS OF WASTE WAS INJECTED INTO WELL #8 IN 1983.

ON MAY 16, 1985: LOSS IN ANNULUS PRESSURE. AFTER LOADING ANNULUS SEVERAL TIMES AND CONTINUING TO LOSE PRESSURE, VULCAN CONCLUDED THAT THEY PROBABLY HAVE A HOLE IN THE TUBING. SEVERAL ATTEMPTS WERE MADE TO FIND THE PROBLEM AND IT WAS FINALLY DECIDED THAT THE ANNULUS OIL HAD WATER IN IT. THE OIL WAS REPLACED AND THE WELL RETURNED TO SERVICE ON JUNE 4, 1985--A MONTH AGO.

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CEMENTING

THE MAJOR FUNCTIONS OF THE CEMENT THAT IS APPLIED BETWEEN THE OUTER WALLS OF THE CASING AND THE BOREHOLE OR OTHER CASING ARE TO RESTRICT MOVEMENT OF FLUIDS BETWEEN THE SURFACE AND THE SUBSURFACE OR BETWEEN DIFFERENT STRATA IN THE SUBSURFACE, TO SUPPORT THE CASING, TO PREVENT POLLUTION OF UNDERGROUND SOURCES OF DRINKING WATER AND TO PREVENT CASING CORROSION.

THE USEPA REPORT ON UNDERGROUND INJECTION STATES THAT IN ALL CASES, CEMENT IS APPLIED IN AT LEAST ONE STRING, FROM THE SURFACE TO BELOW THE BASE AND AT THE CONFINING ZONE ABOVE THE INJECTION ZONE.

THE REPORT NOTES THAT WHEN THE WELL IS DRILLED, A CONDUIT IS CREATED FOR COMMUNICATION BETWEEN THE DIFFERENT STRATA AND UNLESS AN ADEQUATE CEMENTING PROGRAM IS FOLLOWED, MOVEMENT OF FLUIDS COULD OCCUR AT THE INJECTION ZONE INTO OTHER FORMATIONS OR BETWEEN FORMATIONS PENETRATED BY THE WELL.

THE EPA REPORT ERRONEOUSLY LISTED ALL FIVE OF THE VULCAN WELLS AS BEING CEMENTED TO THE SURFACE. WELLS #7 AND #9 ARE NOT.

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WELL #7

In September 1976, KDHE granted Vulcan permission to construct Well #7 for use of highly acidic waste. Well #7 receives acid waste with a pH of .1 to .7.

(The information in the USEPA Report erroneously showed this well as receiving waste with pH of 1.5 to 13.0.)

A letter written TWO MONTHS AFTER PERMISSION TO CONSTRUCT REPORTS THAT THE CEMENTING PROCESS ON WELL #7 FAILED AT A DEPTH OF 2400'.

DOCUMENTS NOTE THAT CEMENT BONDING BETWEEN THE 7" CASING AND THE FORMATION IS NOT CONTINUOUS THROUGHOUT THE ENTIRE LENGTH OF THE HOLE. A CONSULTANT NOTES: "even if the cement bond were to fail and fluid from the Arbuckle comes in contact with outside of casing, ONLY CORROSION WOULD RESULT."

MARCH 1977: PRIOR to use of Well #7, a letter from KDHE notes:

"We were quite concerned, although not surprised, to learn that Well #7 has developed a STATIC COLUMN OF FLUID WHICH HAS A LOW PH. THIS OF COURSE SUBSTANTIATES THAT COMMUNICATION EXISTS WITHIN THE ARBUCKLE FORMATION BETWEEN WELL #7 AND ONE OR MORE OF THE DISPOSAL WELLS IN CURRENT USE..A STATIC COLUMN OF ACIDIC FLUID WOULD HASTEN PIPE CORROSION AND THEREFORE JEOPARDIZE THE INTEGRITY OF THE CASING."

One month later (4-77) the KDHE approved Vulcan's application to use the well and approved the casing EVEN WITH THE LACK OF TOP TO BOTTOM CEMENTING.

SIXTEEN MONTHS LATER; (AUGUST 1978) THE FEED PIPING WOULD ONLY TAKE FEED AT 250 GPM.

NINE MONTHS LATER (MAY 1979): A DECREASE IN ANNULUS FRESSURE WAS REPORTED. INSTEAD OF SHUTTING THE WELL DOWN, THE COMPANY MERELY SWITCHED WASTE STREAMS AND CONTINUED TO USE THE WELL FOR TWO MORE WEEKS.

WHEN THE TUBING WAS FINALLY PULLED, A DAMAGED SECTION WAS FOUND AT 1480 FEET DEPTH.THE WELL WAS RETURNED TO SERVICE 3 DAYS LATER.

FIFTEEN MONTHS LATER (SEPTEMBER 1980): ANNULUS PRESSURE DROPPED. As the string was removed, IT PARTED AT THE 6TH JOINT WHERE IT HAD UNDERGONE CORROSION.

IN 1983, 151,800,000 GALLONS OF WASTE WAS DISPOSED OF THRU THIS WELL.

APRIL 1985: LOST ANNULUS PRESSURE.

-HOLES PRESENT IN 7" CASING FROM 3868' AND BELOW.
-A TWO-FOOT SPLIT WAS OBSERVED IN 5TH AND 8TH JOINTS FROM BOTTOM.
-FOUR MORE JOINTS SPLIT DURING PRESSURE TEST.
-LEAKS IN THREADS OF 168TH JOINT FROM BOTTOM.
-ELECTRONIC CASING CALIPER LOG INDICATED POSSIBLE DAMAGE IN BOTTOM 100 FOOT OF HOLE.

AFTER A KDHE-VULCAN MEETING, LARRY KNOCHE OF KDHE SAID IF THE WELL COULD PASS A PRESSURE TEST, IT COULD BE RETURNED TO SERVICE. THE WELL PASSED THE TEST AND WAS BACK IN SERVICE ON MAY 14, 1985--TWO MONTHS AGO.

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WELL #9

(NOTE: FROM VULCAN'S DESCRIPTION OF THEIR WELLS: "OUR DESIGN CONSISTS OF 3 SEPARATE STEEL CASINGS, EACH OF WHICH IS ANCHORED BY CEMENT FROM THE BOTTOM OF THE HOLE TO THE SURFACE. THIS EFFECTIVELY SEALS AND PROTECTS THE ONLY POTABLE WATER PRODUCING ZONES WHICH ARE AT 50-100 FEET FROM THE SURFACE.")

6-8-82: CEMENT BOND LOG SHOWED ABSENCE OF CEMENT FROM 420' TO 250'--WHICH IS THE FLUID LEVEL OF THE ARBUCKLE.

Vulcan notes that the amplitude of the ring of the pipe SUGGESTS PRACTICALLY FREE PIPE, SUCH THAT NO INTERPRETATION OF ANNULAR CONTENT IS POSSIBLE.

A conference call was held between KDHE and Vulcan--after which VULCAN WAS GIVEN VERBAL APPROVAL TO USE THE WELL AS WAS--VOID OF CEMENT FROM 420' UP.

IN 1983, 9,000,000 GALLONS OF WASTE WAS INJECTED INTO THIS WELL.

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THE USEPA REPORT detailed conditions at twenty injection well sites. I might add that there IS NO RECORD OF VIOLATIONS IN KANSAS. The states of Louisiana, North Carolina, Texas, Ohio, Alabama, Arkansas and Florida considered the following as more than "OPERATIONAL PROBLEMS".

1. DISREGARD FOR COMPATIBILITY BETWEEN WASTES AND TUBING, PACKER AND CASING.

2. INADEQUATE CEMENT IN BOREHOLE

3. CORRODED TUBING AND CASING

4. CASING CRIMPED

5. ACIDIC WASTE DISSOLVED PART OF INJECTION ZONE

6. ANNULUS AND INJECTION FLUID COMMUNICATION

7. INCONSISTENCY IN ANNULUS PRESSURE

8. pH VIOLATION CAUSING CORROSION OF WELL

ALL OF THESE THINGS HAPPEN RATHER ROUTINELY WITH THE VULCAN WELLS AND YET VULCAN IS LISTED AS HAVING NO PROBLEMS.

WHERE DID THE USEPA OBTAIN THE INFORMATION REGARDING THE VULCAN WELLS?

GROUNDWATER

As the largest generator of hazardous waste in the state of Kansas, Vulcan manufactures ammonia, chlorine, caustic soda, hydrogen, chloroform, carbon tetrachloride, methylene chloride, perchloroethylene and Pentachlorophenol. Wastes from the Vulcan plant include all of the above and hexachlorobenzene, solvents, PCBs, Dioxins and other assorted hazardous wastes.

With the limited information available from groundwater monitoring, it isn't possible to take a comprehensive look at the groundwater conditions. What I can see is that most of the aforementioned chemicals -- along with several others-- have been detected in three levels of groundwater as recently as four months ago.

Intercept wells, designed to retrieve the contaminated groundwater, have been operated for several years on and near the site. The highly contaminated water pumped from the ground is then injected into the Arbuckle along with Vulcan's chemical waste.

The Vulcan site has a 41.6 acre chemical waste landfill which has been covered with six feet of clay and "is monitored extensively". Scientific studies have found that chemicals attack soils, causing dissolution of the clay, and allowing the chemical waste to enter the groundwater. It has become commonly known that landfills leak. The state of Kansas found that out in 1982. Putting a top on a leaking landfill does not prevent the migration of chemicals from the clay sides and bottom of the landfill. Vulcan has stated that their concern is not with the groundwater On the site but beyond their boundaries. It would be nice if the chemicals in the groundwater WOULD remain at the fenceline, but they haven't, they don't and they won't.

In March of 1985, some of the chemicals found in the groundwater on site, in all levels of groundwater include:

ORTHO-CLOROPHENOL	3800	PPB
2,4 DICHLOROPHENOL	7500	
2,4,6 TRICHLOROPHENOL	5300	
2,6 DICHLOROPHENOL	1200	
2,4-D	31,000	
2,6-D	22,000	
2,4,6-T	4500	
BENZENE	386	PPB
TETRACHLOROETHYLENE	241	
PARA CHLOROPHENOL	5600	

THIS IS NOT A LIST OF CHEMICALS FOUND PRIOR TO THE "CLEAN UP" OF THE VULCAN SITE. THIS IS A MONITORING REPORT FROM APRIL OF 1985.

HAVE ANY PCB ANALYSES BEEN CONDUCTED ON THE GROUNDWATER ON AND OFF OF THE VULCAN SITE? UP TO 300 PARTS PER MILLION OF PCBS ARE FOUND IN THE PERCHLOROETHYLENE PROCESS WASTE STREAMS.

The condition of the groundwater beyond the Vulcan boundaries is alarming. Groundwater appears to be contaminated in all directions in all three water levels.

SOUTHEAST OF VULCAN, the aquifers contain 8 of the chemicals found in on-site wells.

SOUTHWEST of Vulcan, the groundwater contains ten of the chemicals.

Northeast of Vulcan, analyses reveal 12 of those chemicals. The carbon tetrachloride levels in that area are nearly 8 TIMES HIGHER THAN IN 1984 despite the use of interceptor wells.

Twenty-eight chemicals were found in shallow and deep aquifers SOUTH of Vulcan. This well appears to be at the south end of the landfill and would create a reasonable conclusion that the landfill is leaking.

At least 15 PRIVATE RESIDENCES HAVE CONTAMINATED WELL WATER. The wells contain up to NINE CHEMICAL CONTAMINANTS ranging from less than 1 PPB to 35 parts per billion of individual chemicals--the same chemicals in the aforementioned groundwater samples. It is my understanding that Vulcan has purchased property with contaminated groundwater and financed water line installation from the city of Clearwater to supply these contaminated homes. A memo titled Vulcan Meeting Notes states that "Carbon filters installed on many residents' well water. Carbon filters may or may not reduce chemical contaminant levels in the drinking water. At the best, filtering drinking water provides a false assurance to the affected citizens. According to the National Journal of Public Health, skin absorption and inhalation represent a significant route of exposure to chemicals. In other words, if it is indeed possible to filter chemicals from drinking water--bathing in contaminated water and inhalation of contaminated air apparently provides a greater source of exposure than actually consuming the water.

While that may be a responsible action for the company to take, I would hope that the regulatory agencies do not consider such acquisition of contaminated property as an adequate method of dealing with ongoing water pollution from the Vulcan site. If so, Vulcan conceivably could become the landlord of a lot of property south of Wichita. PEOPLE ON THE OUTER EDGES OF EACH VULCAN ACQUIRED PROPERTY SHOULD BE ALERT TO THIS FACT.